The European Childhood Obesity Group (ECOG) project: the European collaborative study on the prevalence of obesity in children

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ABSTRACT During the European Congress on Obesity held in Barcelona in 1996, the European Childhood Obesity Group (ECOG) proposed a study designed to estimate the prevalence of obesity by country. An overview of existing systems revealed that most countries have no suitable structure in place for the determination of obesity in children and that the most practical sources of samples would be the school systems. A protocol was drawn up for these countries, whereas for those countries already collecting data, guidelines were defined to clarify the criteria allowing inclusion in the common analysis. The target population is 7–9-y-old children. The study design consists of separate cross-sectional population studies by country with a cluster probability sample of 2000 children attending primary school. The minimum common data will be age, weight, height, and hip, thigh, and waist circumferences. The participating countries will be encouraged to collect harmonized data on social indicators, lifestyle, diet, physical activity, and anthropometric measures of the parents. Children will be measured either by centrally based traveling examiners or, in countries with limited resources, by local staff. Each country will computerize its own data and send a copy to a center responsible for the common analysis. The main analysis will be of body mass index distribution in children from the different populations and determination of the proportion of children with a BMI above the 90th percentile of a common reference population. Members of the ECOG in 14 European countries have confirmed their interest in the project.

INTRODUCTION

Obesity in childhood is a public health problem of increasing importance in developed countries. However, a system for the precise estimation of the prevalence of this condition is not available in most European countries. The European Childhood Obesity Group (ECOG) aims to estimate the prevalence of obesity by country, in a way that would allow geographic (between countries) and chronologic comparisons. This article includes a short history of this project, a description of the updated version of the protocol, and the present status of the project.
Design and method

The target population in each country consists of 7–9-y-old children. This age group was chosen for both medical and practical reasons. At this age, the identification of obesity is of value to predict the condition in adulthood, and schooling is usually obligatory. Furthermore, this age range precedes puberty and eliminates possible differences between countries that could be attributed to variations in the age of puberty.

The proposed design consists of separate cross-sectional studies, by country, with probability samples of children attending primary school and a cluster sampling technique. Considering a limit for obesity that would define 10% of the population as obese, a simple random sample of 875 children would allow a 95% CI of ±2% (i.e., between 8% and 12%). A moderate cluster effect is likely to happen. It was considered both realistic and acceptable to expect such an effect to increase the 95% CI by 1.5 at most, (i.e., between 7% and 13%). On the other hand, stratification on a geographic basis is planned, which may increase precision. A sample size of 2000 children per country was adopted, which would provide ~1000 children of each sex.

All countries have or can easily set up lists of schools available that can be used as sampling frames. However, the sizes of the schools may often be too variable to allow the schools themselves to be used as clusters. Therefore, such a list cannot be used directly for randomization. Few countries have data available on the number of children per school; therefore, 2 procedures were proposed. Procedure 1 is suitable for countries in which a detailed list of schools, with numbers of pupils by age and sex, is available. This would allow for the definition and random assignment of the clusters based on that list. Procedure 2 is proposed for countries that do not have such a detailed list. In this situation, a sample of schools will be selected at random and the age-to-sex structure of those schools will be determined. Clusters will then be defined on the basis of that sample and a subsample will then be selected. Both procedures will result in cluster probability samples in which clusters will be groups of ~30 children attending the same school. Stratification on a geographic basis is recommended.

Data collection

Among the measurements relevant to obesity, ECOG chose the most feasible ones to collect on a large scale: weight and height, for calculation of body mass index, and hip, thigh, and waist circumferences. Nursing or medical staff members will measure the children. Two alternative systems are proposed: 1) recruitment of a small number of centrally based traveling examiners and 2) use of local medical staff, especially in countries where medical teams operate in schools at the age considered and where resources are limited. In this case, detailed instructions on measurement techniques will be provided to ensure acceptable data quality.

Depending on the resources available, each country will decide whether to organize data collection on social indicators, lifestyle, weight, and height of the parents and on the dietary habits and physical activity of the children. In such cases the school authorities will convey a questionnaire to the parents before the intervention. The fieldworker will collect the completed questionnaires.

Data processing

The data will be computerized by country. Each country will send a copy to the statistics center (the Dunn Nutrition Center), which will be responsible for the common analysis. The main analysis, common to all the participant countries, will consist of estimation, by sex and country, of the BMI distribution and the proportion of children with a BMI above the 90th percentile of a common reference population. An attempt will be made to identify subpopulations, defined on geographic and social grounds, with high prevalences of obesity. Confounding factors, such as season, will be accounted for. Dietary intake, exercise, and lifestyle indicators will also be analyzed, concentrating on possible disparities between countries. An attempt will be made to evaluate to what extent those disparities, if any, can account for differences in the prevalence of obesity. This analysis may lead to new hypotheses on the determinants of obesity within those populations. Apart from this common analysis, each local team will be free to develop local procedures, for instance to study prevalence disparities within their country or organize a follow-up of the sample selected.

Existing data

It was proposed that existing data would be included in the analysis if they were nationally representative samples of adequate sample size (1000 minimum for both sexes); were obtained within the past 2 y; and included high-quality measurements of...
sex, age, height, and weight (and hip, thigh, and waist circumferences and other measurements, if available). Additionally, these high-quality measures had to have been checked at regular intervals with the same criteria used in the surveys.

Supervision

ECOG, represented by its president, W Burniat, will be responsible for the overall supervision of the study. An international group, including pediatricians, obesity specialists, and epidemiologists, will be responsible for the coordination of the studies between countries. At a national level, a team with medical and statistical expertise will be in charge of the study in each country. Local informed consent will be obtained.

Prospects

The same study, repeated at 5-y intervals, would constitute a surveillance system to examine secular trends. This same design, possibly after modification, could be used when representative data on health are to be collected on prepubertal children in European countries.

Current status

On the basis of the updated protocol, 8 countries have given some indications on how they intend to proceed (Table 1). Estimates of the cost of the study per country have been provided by 5 countries; the estimates are not presented because they need to be harmonized.

CONCLUSION

ECOG is now finalizing a detailed protocol that would be flexible enough to allow for large participation of European countries. Funding will be their main preoccupation.